

In re Patent Application of:
ROY ET AL.
Serial No. 10/777,731
Filed: FEBRUARY 12, 2004

In the Claims:

This listing of claims replaces all prior versions and listing of claims in the application.

1. (Currently Amended) A communications system comprising:

a plurality of data storage devices, each using at least one of a plurality of operating protocols, at least one data storage device communicating using multiple operating protocols;

a plurality of mobile wireless communications devices for accessing said at least one data storage device, each mobile wireless communications device communicating using at least one of the plurality of operating protocols; and

a protocol interface device comprising

a front-end proxy module for communicating with said plurality of mobile wireless communications devices using respective operating protocols; and

a protocol engine module for

communicating with said plurality of data storage devices using respective operating protocols,

determining whether a given data storage device of said plurality thereof communicates using multiple operating protocols,

selecting a single supported operating protocol for communicating with the given data

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storage device of said plurality thereof if only a single operating protocol is supported thereby, and

selecting a desired operating protocol for communicating with the given data storage device of the plurality thereof from the multiple operating protocols if multiple operating protocols are supported thereby;

said protocol engine module selecting the desired operating protocol based upon a ranking of the plurality of operating protocols, the ranking being based upon a total number of protocol-supported elements.

2. (Canceled)

3. (Canceled)

4. (Original) The communications system of Claim 1 wherein said protocol interface device further comprises a memory connected to said protocol engine module for storing per-account information associated with each mobile wireless communications device; and wherein said protocol engine module further selects the desired operating protocol based upon the per-account information for a given wireless communications device.

5. (Original) The communications system of Claim 1

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wherein said front-end proxy module and said protocol engine module communicate using a common interface protocol able to represent a desired number of protocol-supported elements for a desired operating protocol.

6. (Original) The communications system of Claim 1 wherein said plurality of data storage devices, said plurality of mobile wireless communications devices, and said protocol interface device process electronic mail (e-mail) messages.

7. (Original) The communications system of Claim 1 wherein said mobile wireless communications devices send access requests; and wherein said data storage devices send data responsive to access requests.

8. (Original) The communications system of Claim 7 wherein at least one of said data storage devices is for electronic mail (e-mail) messages; and wherein the at least one e-mail storage device responds to an access request with a root folder and target e-mailbox capabilities.

9. (Original) The communications system of Claim 1 wherein said protocol interface device generates an error responsive to at least one non-supported operating protocol.

10. (Original) The communications system of Claim 1 further comprising a wide area network (WAN) connecting at least

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one of said mobile wireless communications devices with said protocol interface device.

11. (Original) The communications system of Claim 1 further comprising a wide area network (WAN) connecting at least one of said data storage devices with said protocol interface device.

12. (Currently Amended) A protocol interface device for interfacing a plurality of mobile wireless communications devices with a plurality of data storage devices, the mobile wireless communications devices and the data storage devices each communicating using at least one of a plurality of operating protocols, and at least one data storage device communicating using multiple operating protocols, the protocol interface device comprising:

a front-end proxy module for communicating with the plurality of mobile wireless communications devices using respective operating protocols; and

a protocol engine module for

communicating with the plurality of data storage devices using respective operating protocols, determining whether a given storage device of the plurality thereof communicates using multiple operating protocols,

selecting a single supported operating protocol for communicating with the given data storage

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device of the plurality thereof if only a single operating protocol is supported thereby, and selecting a desired operating protocol for communicating with the given data storage device of the plurality thereof from the multiple operating protocols if multiple operating protocols are supported thereby; said protocol engine module selecting the desired operating protocol based upon a ranking of the plurality of operating protocols, the ranking being based upon a total number of protocol-supported elements.

13. (Canceled)

14. (Original) The protocol interface device of Claim 12 further comprising a memory connected to said protocol engine module for storing per-account information associated with each mobile wireless communications device; and wherein said protocol engine module further selects the desired operating protocol based upon the per-account information for a given mobile wireless communications device.

15. (Original) The protocol interface device of Claim 12 wherein said front-end proxy module and said protocol engine module communicate using a common interface protocol able to represent a desired number of protocol-supported elements for a desired operating protocol.

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16. (Original) The protocol interface device of Claim 15 wherein the common interface protocol is able to represent all protocol-supported elements for a most capable operating protocol.

17. (Original) The protocol interface device of Claim 12 wherein the plurality of data storage devices, the plurality of mobile wireless communications devices, the front-end proxy module, and the protocol engine module process electronic mail (e-mail) messages.

18. (Currently Amended) A protocol interface device for interfacing a plurality of communications devices with a plurality of data storage devices, the communications devices and the data storage devices each communicating using at least one of a plurality of operating protocols, and at least one data storage device communicating using multiple operating protocols, the protocol interface device comprising:

a front-end proxy module for communicating with the plurality of mobile wireless communications devices using respective operating protocols; and

a protocol engine module for
communicating with the plurality of data
storage devices using respective operating protocols,
determining whether a given data storage
device of the plurality thereof communicates using
multiple operating protocols,

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selecting a single supported operating protocol for communicating with the given data storage device of the plurality thereof if only a single operating protocol is supported thereby, and

selecting a desired operating protocol for communicating with the given data storage device of the plurality thereof from the multiple operating protocols if multiple operating protocols are supported thereby; said protocol engine module selecting the desired operating protocol based upon a ranking of the plurality of operating protocols, the ranking being based upon a total number of protocol-supported elements.

19. (Canceled)

20. (Original) The protocol interface device of Claim 18 further comprising a memory connected to said protocol engine module for storing per-account information associated with each mobile wireless communications device; and wherein said protocol engine module further selects the desired operating protocol based upon the per-account information for a given communications device.

21. (Original) The protocol interface device of Claim 18 wherein said front-end proxy module and said protocol engine module communicate using a common interface protocol able to represent a desired number of protocol-supported elements for a

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desired operating protocol.

22. (Original) The protocol interface device of Claim 18 wherein the common interface protocol is able to represent all protocol-supported elements for a most capable operating protocol.

23. (Original) The protocol interface device of Claim 18 wherein the plurality of data storage devices, the plurality of communications devices, the front-end proxy module, and the protocol engine module process electronic mail (e-mail) messages.

24. (Currently Amended) A method for interfacing a plurality of mobile wireless communications devices with a plurality of data storage devices, the mobile wireless communications devices and the data storage devices each communicating using at least one of a plurality of operating protocols, and at least one data storage device communicating using multiple operating protocols, the method comprising:

providing a front-end proxy module for communicating with the plurality of mobile wireless communications devices using respective operating protocols;

providing a protocol engine module for communicating with the front-end proxy module and for

communicating with the plurality of data storage devices using respective operating protocols, determining whether a given data storage

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device of the plurality thereof communicates using multiple operating protocols,

selecting a single supported operating protocol for communicating with the given data storage device of the plurality thereof if only a single operating protocol is supported thereby, and

causing the protocol engine module to select a desired operating protocol for communicating with the given data storage device from the multiple operating protocols;

the desired operating protocol being selected based upon a ranking of the plurality of operating protocols, the ranking being based upon a total number of protocol-supported elements.

25. (Canceled)

26. (Original) The method of Claim 24 wherein the protocol engine module further selects the desired operating protocol based upon per-account information associated with a given one of the mobile wireless communications devices.

27. (Original) The method of Claim 24 wherein the plurality of data storage devices, the plurality of mobile wireless communications devices, the front-end proxy module, and the protocol engine module process electronic mail (e-mail) messages.

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28. (Currently Amended) A computer-readable medium having computer-executable modules comprising:

a front-end proxy module for communicating with a plurality of mobile wireless communications devices using respective operating protocols; and

a protocol engine module for communicating with a plurality of data storage devices using respective operating protocols, and for communicating with the front-end proxy module;

at least one data storage device communicating using multiple operating protocols, and the protocol engine module

determining whether a given data storage device of the plurality thereof communicates using multiple operating protocols,

selecting a single supported operating protocol for communicating with the given data storage device of the plurality thereof if only a single operating protocol is supported thereby, and

selecting a desired operating protocol for communicating with the given data storage device of the plurality thereof from the multiple operating protocols if multiple operating protocols are supported thereby; the protocol engine module selecting the desired operating protocol based upon a ranking of the plurality of operating protocols, the ranking being based upon a total number of protocol-supported elements.

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29. (Canceled)

30. (Original) The computer-readable medium of Claim 28 wherein the protocol engine module further selects the desired operating protocol based upon per-account information associated with a given one of the mobile wireless communications devices.

31. (Original) The computer-readable medium of Claim 28 wherein the plurality of data storage devices, the plurality of mobile wireless communications devices, the front-end proxy module, and the protocol engine module process electronic mail (e-mail) messages.